

## **Instrument System Manager GS14 - UNOFFICIAL**

### **Core Requirements**

The Instrument Systems Manager (ISM) is responsible for planning, organizing, and directing the instrument definition and development for the mission. The ISM is supported by a team of Project personnel and AETD technical personnel. The major duties of the incumbent include:

- a. Develops the overall plan for the definition and development of the instruments. The plan includes cost, schedule, division, and assignment of technical tasks and all technical and management interfaces.
- b. Prepares budgetary requirements for the instruments. Monitors expenditures against the overall plan to ensure proper cost control. Adjusts and negotiates budgetary requirements as required. Provides expert assistance to the GSFC Project management team in reviewing contractor spending profiles as planned.
- c. Prepares, monitors, and manages top-level schedule requirements for the instruments. Reviews detailed schedules developed by the instrument contractor for compliance with the overall plan. Provides expert assistance to the Project management team in reviewing contractor-developed schedules. Where necessary, resolves and prepares workaround plans to eliminate schedule conflicts. Responsible for ensuring that schedules are compatible with the mission contract schedule and coordinates compliance and resolution with the responsible Technical Officer.
- d. Prepares instrument performance requirements consistent with science measurement objectives. Reviews science measurements to assure compliance with science mission goals. Forecasts instrument performance and adjusts requirements as required. Recommends workarounds, when necessary, to meet mission objectives.
- e. Guides the development of Interface Control Documents (ICDs) for the instruments. Working with the spacecraft personnel, resolves conflicts between instrument and spacecraft interfaces to ensure that scientific objectives are not compromised. Consolidates and reviews checkout procedures and functional operation descriptions to assure that they are complete and that integration and test procedures meet requirements. Consolidates and reviews each change in spacecraft operation, configuration, and orbit for its effect on the science objectives and makes appropriate technical recommendations to the Deputy Project Manager.
- f. Coordinates, manages, and guides the implementation of the instrument ground data systems based on technical requirements developed in conjunction with the Project Data Systems Manager. Assures that data plans are reasonable and satisfy both science objectives and program requirements.

- g. Acts as technical liaison between the Project and the principal investigators (PIs), foreign institutions, and other government installations.
- h. Provides inputs to project-level documentation relating to instrument development process. Documents include Flight Assurance Plan, Safety Plan, Calibration Plan, and Verification Plans.
- i. Accountable for instrument-related activities during launch operations. Develops post-launch experiment operations plans and participates in their execution. Monitors the production and distribution of scientific data packets.
- j. The incumbent is responsible to his/her supervisor for assuring that the work assignments of other employees are carried out by performing a range of duties such as:
  - Distribute and balance the workload among employees in accordance with established work flow or job specialization, and assure timely accomplishment of work.
  - Instruct employees in specific tasks and job techniques and make available written instructions, reference materials, and supplies.
  - Give on-the-job training to new employees in accordance with established procedures and practices.
  - Maintain current knowledge and answer questions of other employees on procedures policies, directives, etc., and obtain needed information or decisions from supervisor on problems that come up.
  - Check on work in progress, spot check, and review completed work to see that supervisor's instructions on work sequence, methods, procedures, and deadlines have been met.
  - Amend or reject work not meeting established standards, referring unusual situations to supervisor.
  - Report to supervisor on performance progress, and training needs of employees.
  - Make information suggestions to supervisor as requested concerning promotion, reassignment, recognition, and personnel needs.
  - Make recommendations concerning performance appraisals of employees in the work unit as requested by the supervisor.
  - Provides technical guidance and training to a group of instrument technical engineers who support instrument developments. Assigns work tasks and monitors progress.

#### **FACTOR 1 - Knowledge Required by the Position**

- a. A Bachelor's degree in an appropriate field of engineering, mathematics, or physical science is required.

- b. Knowledge of the state-of-the-art in scientific instrument development. Development of these highly sophisticated, large instruments require the ability to apply new developments to problems that are unique or that cannot be solved by generally accepted methods.
- c. Knowledge of the policies governing the working relationships between NASA and the universities (both domestic and foreign), other government agencies, and agencies of foreign governments. Makes recommendations and decisions based on his/her interpretation of these policies.
- d. Knowledge and understanding of the mission's scientific requirements and resources available for instrument development.
- e. Ability to apply scientific principles to instrument development. This knowledge is used to define requirements, allocate resources, guide system design, and resolve conflicts.
- f. Detailed knowledge of all the support systems and elements such as spacecraft systems, GSFC quality assurance, mission and data operations, NASA procurement practices, etc. Knowledge is used to ensure that the instrument is designed and fabricated on schedule and within cost. An example is the screening of flight electronic parts to meet the quality assurance requirements. Reviews instrument plans to ensure they meet these requirements.
- g. Knowledge of and ability in planning, scheduling, and allocating resources for the hardware, instrument ground data systems, and software. Knowledge is used to plan and direct these efforts, to schedule hardware and software tests, and to achieve end-to-end testing of the instrument systems.
- h. Knowledge of all quality assurance testing, practices, and procedures; general safety requirements; GSFC safety requirements; and test and calibration equipment limitations to assure scientific instrument performance and measuring capability.
- i. Ability to guide the efforts of professional employees.
- j. Ability to communicate both oral and written information to senior management, foreign government representatives, and outside organizations.

#### **FACTOR 2 - Supervisory Controls**

The Instrument Systems Manager receives direction from the Deputy Project Manager in terms of a broadly defined set of mission objectives, a budgetary allocation, and a schedule of deliverables.

He/she negotiates the contract with the instrument contractors; controls the instruments' budgets, determining where contingency funds are to be applied; negotiates delivery of the instruments

with the Project Manager and other support elements; deals directly with the PIs and with industry in resolving fiscal matters that are within his/her budgetary allocation; determines the acceptability of all budgetary and schedule data, and directs changes where necessary. He/she is the Project's fiscal and technical authority on the assigned instrument, making decisions and recommendations on major scientific instrument changes.

Results of his/her work are considered technically authoritative and are accepted without significant change. The incumbent provides the supervisor with a continuing orientation on the managerial aspects of the job and problems encountered. Work is reviewed for achievement of objectives and compliance with policies and objective.

### FACTOR 3 – Guidelines

The Instrument Systems Manager receives non-specific guidelines in the form of broadly stated mission objectives and NASA policies and specific guidelines on the measurement each scientific instrument is to achieve.

He/she uses independent judgment in interpreting these broad guidelines to develop more specific requirements that are used by the instrument team in determining the scientific instrument development plan. The end product is a set of plans, procedures, and schedules that meets both sets of guidelines. He/she is responsible for the proper implementation of ICDs that specifically define the instrument interfaces.

### FACTOR 4 – Complexity

The assigned instrument is an extremely complex facility class, state-of-the-art scientific instrument that is providing unique first-time measurements of the earth that is critical to the success of the mission.

### FACTOR 5 - Scope and Effect

The mission is a major NASA science program. The work involves planning, developing, and testing of the science/facility instruments to accomplish the objectives of this vital scientific mission.

Data obtained by the instruments will yield results, after analysis by the science teams, that will improve the knowledge of the Earth and will yield new knowledge in how the Earth works as a system.

### FACTOR 6 - Personal Contacts

The incumbent has personal contacts with all the PIs, the co-PIs, heads of the laboratories in which these investigators work, U.S. government agencies, foreign institutions participating in the

mission, and senior officials of all the contractors assisting the scientific investigators. He/she has contact with the Center Director and his staff and many of the Directors of at GSFC. He/she deals with division chiefs and branch heads at GSFC to obtain support as well as dealing with engineers, managers, lawyers, procurement specialists and officers, and many other personnel, both at GSFC and at the contractors' facilities. These contacts occur in both formal and informal settings.

#### FACTOR 7 - Purpose of Contacts

The personal contacts with high-ranking officials are diverse. They include the following:

- a. Advising, monitoring, and directing the PIs and their collaborators.
- b. Discussing with contractors the progress made on the instruments and requesting the aid of senior officials in resolving problems.
- c. Presenting and discussing the instrument status with the senior management at GSFC and with personnel at NASA Headquarters.
- d. Conferring with senior personnel at other NASA Centers concerning interrelationships with GSFC and instrument development policies.
- e. Obtaining from division chiefs, branch heads, etc., support required to aid the scientific investigators.
- f. Reporting to the Center management on scientific matters, budget, and schedule.

#### FACTOR 8 - Physical Demands

Typical engineering and management work is required. This includes deskwork, meetings, and conferences in and around GSFC and NASA Headquarters. Extensive domestic travel is required. No special physical demands are required.

#### FACTOR 9 - Work Environment

The normal work environment is a typical office environment requiring no special demands. During integration and test, launch, and post-launch phases, work includes longer hours--some in controlled environments in which special requirements prevail for health and safety reasons. This sometimes requires special clothing, precautions, etc., for safety reasons.